

# **AMENDMENTS TO THE SPECIFICATION**

## **Changes for section: COVER PAGE FOR SUBSTITUTE SPECIFICATION**

On page 1, line 1, please amend by deletion as follows:

**~~Clean Copy~~**

Page 1, line 3, please amend by deletion as follows:

**~~Ergonomic Swim Fin Apparatus~~**

Page 1, line 16, please by deletion as follows:

**~~U.S. Utility Patent Application Amended of~~**

Page 1, line 20, please amend by deletion as follows:

**~~John Melius~~**

**Changes for section: TITLE OF INVENTION**

**Page 2, lines 1- 2, please amend the paragraph as follows:**

***~~Ergonomic Swim Fin Apparatus~~***

**~~By John Melius~~**

**TITLE OF INVENTION**

**Ergonomic Swim Fin Apparatus**

**Changes for section: CROSS REFERENCE TO RELATED APPLICATIONS**

**Page 2, lines 3-5, please amend by inserting the heading as follows:**

**CROSS REFERENCE TO RELATED APPLICATIONS**

This utility patent application claims priority of provisional patent

Application ~~6026558-4~~ 60/265581 filed February 2, 2001, which is incorporated by reference herein.

**Changes for section: BACKGROUND OF THE INVENTION**

**Page 4, line 13 through page 5, line 5, please amend the paragraph as follows:**

~~A pending patent filed by this U.S. Patent 6,375,531 granted to the~~  
present inventor comes the closest to adapting the system used by fish for  
propulsion. It uses a stiff flat blade for propulsion, a flexible portion, and a "wing  
shaped" tail to provide lift. ~~[[ It's ]]~~ It is a very effective form of locomotion that  
fulfills all of the requirements for effective fish propulsion system, but it is not as  
ergonomic in its design with regard to the human foot and anatomy, as is the  
present invention. The ~~patent pending invention~~ described in U.S. patent  
6,375,531 uses a stiff blade that extends beyond the toes which creates  
unnecessary work and undue pressures on the foot of the swimmer, and makes  
walking in the fins very difficult. Secondly, the invention described in U.S. patent  
6,375,531 ~~pending patent~~ requires more material in the production of the swim  
fin ~~[[, ]]~~ than required by a swim fin disclosed in the present invention, because  
the ~~pending swim fin~~ described in the latter-noted patent must be longer and  
heavier than the present embodiment shown in FIG. 1, 5, 11, 12 and 15, to  
produce similar propulsion results.

**Changes for section: BRIEF SUMMARY OF THE INVENTION**

**Page 8, line 7, please amend the paragraph as follows:**

~~SUMMARY OF THE INVENTION~~  
BRIEF SUMMARY OF THE INVENTION

**Changes for section:**

**BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS**

**Page 11, line 12, please amend the paragraph as follows:**

**~~Brief Description of the Drawings~~**

**BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS**

**Changes for section: DETAILED DESCRIPTION OF THE INVENTION**

**Page 14, line 1, please amend the paragraph as follows:**

**~~Detailed Description of the Preferred Embodiments of the Invention~~**

**DETAILED DESCRIPTION OF THE INVENTION**

**Page 14, lines 2-13, please amend the paragraph as follows:**

FIG. 1A shows a top view of the swim fin apparatus 1000 of the present invention. The user's leg and foot 300 is inserted into the foot-pocket 101 and

held in place by a securing strap 103 which extends behind the user's heel. The foot-pocket 101 can be made of a waterproof, semi-flexible material such as polyurethane, plastic or rubber. Preferably, the foot-pocket 101 is resilient and flexible, to conform to the user's foot. Channeling scoops 102 are positioned one each side of the foot-pocket 101, and the channeling scoops 102 are preferably more rigid in construction than the foot-pocket. The channeling scoops 102 are preferably made of a different material than the foot-pocket 101. However, the channeling scoops 102 may alternately be made of the same material used for the foot-pocket 101.

**Page 16, line 7 through page 17, line 1, please amend the paragraph as follows:**

FIG. 1B shows a second diagrammatic side view of a pelagic free swimming aquatic vehicle 1005, disclosed in US Patent 6,138,604, which illustrate some features of the scientific research being done at major Universities such as MIT and others. Although this work is the study of aquatic vehicles, instead of swim fins, much of the information in these studies[[ , ]] parallels the conclusions that are reached in this ergonomic swim fin apparatus 1000.

Note the similarity of the "RIGID FOREBODY" 1001, "FLEXIBLE AFTERBODY" 1002, and the symmetrical "TAIL 1003 shown in the preferred embodiment of this invention, and U.S. patent 6,138,604 shown in FIG. 1B. In FIG. 1, the toes on the leg and foot 300 illustrate that there is a left side 127 and a right side 128 of the tail fin 120 which are equal in size

thus making them symmetrical in this swim fin apparatus 1000. The research in 6,138,604 suggests that the "RIGID FOREBODY" should constitute 40% to 80% of the proportion of the aquatic vehicle 1005. In research done on prototypes of this swim fin apparatus 1000, these figures are proven true.

**Page 17, line 18, through page 18, line 5, please amend the paragraph as follows:**

FIG. 2 and FIG.3 illustrate the differences in mechanical and ergonomic (less stress on the leg and foot 300) advantages by moving the stiff foot plate 50, "the Paddle", of the swim fin closer to the [[ heal ]] heel of the foot. FIG. 2 represents the swim fin apparatus 1000 presented in the present patent application, and FIG. 3 shows the methods used by the vast majority of swim fins in operation at present.

**Page 20, lines 1-10, please amend the paragraph as follows:**

FIG. 8 represents the type of swim sandal/shoe 1300 that is found in the prior art. It generally used hinges on the flaps 107, and the flaps were placed horizontally to the ground. This would allow the flaps 107 to extend when the foot is pushed down in a swimming stroke. They would fold down to decrease

resistance when the foot was raised towards the body during swimming. This had the advantage of giving more surface area against the water for the foot to push against, and it did let the foot bend and move at the toes (in more enlightened cases). The hinges did nothing to channel the flow of water in a desired direction, in order to increase propulsion. It only had an effect in the down stroke of the swimming cycle.

**Page 22, lines 5-15, please amend the paragraph as follows:**

To enhance the flow of water over the swim fin apparatus 1000, a flexible blade 110 is preferably secured to the swim fin apparatus 1000. The flexible blade 110 is symmetrical in FIG. 10, the toes on the leg and foot 300 illustrate that there is a left side 127 and a right side 128 of the flexible blade 110 which are equal in size ~~thus making~~ thus making them symmetrical in swim fin apparatus 1200, and extends symmetrically and outwardly from the channeling scoops 102, in proximity to the user's toes. The flexible blade 110 pushes off of the rolling vortices of water produced by the foot-pocket/sandal/shoe and the channeling scoops 102. In the embodiment shown in FIG.10, the blade tips 117 and centrally positioned channeling groove 116 also help to channel the water into a vector flowing away from the center of the flexible blade 110.

**Page 23, lines 14-19, please amend the paragraph as follows:**

In this embodiment, the symmetrical flexible blade sole 108 is detachable

from the flexible blade 110, and may be selectively attached and removed, for ease of shipping and handling. By providing a releasable attachment means such as a hook 1112 and catch 1111 at the toe end of the flexible blade [[ sole ]] sole 108, the distal end of the flexible blade 110 is removable, enabling the user to easily walk on land, without removing the entire swim fin apparatus.

**Page 27, line 15, through page 28, line 5, please amend the paragraph as follows:**

FIG. 14 shows a side view of the swim fin 1650, during an up-stroke foot motion shown with an arrow 500. This embodiment 1650 has two differences from the embodiment 1640 in FIG. 13. It has a larger channeling scoop 1022 and a directional channeling curve 1052 that can be attached to the foot-pocket 101 by a retaining pin 104. When retaining pin 104 is wedged into the retaining slot 1071 on the reinforcing side 1027 of the ~~larger~~ larger channeling scoop 1022, the channeling scoop 1022 is made secure. This larger channeling scoop 1022 is designed to extend around the back of the leg and foot 300. This embodiment would eliminate the need for a securing strap 103. This side view also shows the flexible nature of the flexible blade 110 where it bends immediately at the joints of the toes on the leg and foot 300.



**Page 30, lines 7-16 , please amend the paragraph as follows:**

When the hooks and loops type fasteners 1017 on the opposing fore ~~straps~~ straps 1016 are adjustably secured together, the user's foot is secured to the swim fin sandal apparatus 1500. In conventional swim fins that have a stiff blade element extending beyond the toes, as shown in FIG. 3, these securing means would not be sufficient, because the forces involved in swimming with the prior art apparatus are too great. But in this embodiment, shown in FIG. 20, the swim fin sandal apparatus 1500, and in all other embodiments like this swim fin apparatus 1000, the forces are substantially reduced and spread across the entire foot (making this design more ergonomic), thus enabling the use of less severe means of securing the ergonomic swim fin apparatus 1000 to the leg and foot 300.

**Page 36, lines , please amends the paragraph as follows:**

In FIG. 24, one means of attaching a tail fin 140 to a flexible blade 110 is illustrated. In this embodiment 140, the ~~extended neck~~ extended neck 142 extends symmetrically from the longitudinal axis of the tail fin 140 where the left side 127 and the right side 128 are mirror images of each other in a symmetrical configuration for securement to the central portion of the flexible blade 110. Any known securement means may be used. FIG. 24 has specialized adaptations including a tail fin slit 1421 and a securing receptacle 1181, for releasable securement the extended neck 142 of the tail fin 140 to the central longitudinal axis of the flexible blade 110.